HEALTH Laboratories Safety Manual

"Safe and Healthy Lives in Safe and Healthy Communities (and Worksites!)"

Presented by the HEALTH Laboratories Safety Committee and the Associate Director of HEALTH Laboratories, Dr. Gregory Hayes.

Version 2.4- 11/04

Acknowledgements

The Laboratory Safety Committee would like to thank all non-committee staff who contributed to this important project.

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I. SAFETY STATEMENT

It is the policy of the HEALTH Laboratories to provide a comprehensive safety program that will enable employees to perform their assignments without undue risk to their health and safety.

The purpose of the LABORATORY SAFETY MANUAL, the CHEMICAL HYGIENE PLAN, BLOOD BORNE PATHOGEN EXPOSURE CONTROL PLAN, MANAGEMENT OF REGULATED MEDICAL WASTE PROTOCOL and the CONTINGENCY PLAN AND EMERGENCY RESPONSE PLAN is to establish a uniform, minimum level of safe practices. The general procedures set forth here cannot, and are not meant to replace more detailed instructions concerning test procedures which may be established additionally by supervisors and others familiar with the specific hazards in the areas under their control. Further, active safety-consciousness of individuals is essential.

The safety program for the HEALTH Laboratories is oriented toward insuring that:

- All personnel are working in a safe physical environment.
- All personnel are working in the safest possible manner consistent with the tasks performed.
- Contingency plans and procedures are prepared for emergency situations.

II. GENERAL POLICIES

A. Smoking

There shall be no smoking in any part of the Cannon Building or the Chapin Building (including vestibules, snack bar, lounges and all other areas), nor within 50 feet of these buildings.

The sale of smoking materials is not permitted in the Department of Health facilities.

The Department of Health has smoking cessation programs available to all Department of Health employees who wish to quit smoking.

The Department of Health's smoke-free policy shall be conspicuously posted throughout the Department.

Employees who violate this policy shall be subject to regular disciplinary procedures.

B. Eating and Drinking

Food storage - Food is to be stored only in offices in refrigerators or cabinets that are located outside the work area and are used for food storage only or in the refrigerator in the Canteen. All "FOOD ONLY" Refrigerators are to be clearly marked as such and no samples, specimens, chemicals, biologics, etc. are to be stored in them.

Food Preparation - Food is to be prepared only in the Canteen, solaria and offices. Hot water for coffee, tea, etc., may be prepared in the same areas. All electrical appliances must be used in accordance with manufacturer's instructions and equipped with an automatic shut - off to prevent overheating. Do not use laboratory glassware, dishes, or pans to prepare or consume foods or beverages. Do not use laboratory chemicals such as sodium chloride (salt) and sucrose (sugar) to season food or beverages.

Food and Beverage Consumption - Eating and drinking are allowed only in the canteen, the solaria, offices and library.

III. EMERGENCY TELEPHONE NUMBERS

All Emergencies	**911**

24 Hour Chemical Information (MSDS's)

3E Company	1-800-451-8346

Major Chemical Spills

Philip Services (dial only after notifying Management)	401-781-6340

Bloodborne Pathogens Exposures

Division of Disease Control and Prevention	ext. 2577
Miriam Hospital (dial only after consulting Bloodborne Pathogens Exposure Control Plan)	793-2500

Laboratory Management

Gregory Hayes- Associate Director of Health (Laboratories)	ext. 5555
Joseph Catalano- Administrator, HEALTH Laboratories	ext. 5508
Kenneth W. Jones- Chief, Public Health Microbiology	ext. 5596
Ewa King- Chief, Public Health Chemistry	ext. 1999
David B. Uliss- Chief, Forensics	ext. 5593

To Contact a HEALTH Administrator or Physician after Normal Working Hours (including weekends)	272-5952

IV. RESPONSIBILITY FOR SAFETY

All employees, whether in a laboratory or office, must realize that most personal injuries are avoidable and that safety consciousness must be exercised at all times to prevent injury, loss of income, property damage, or even death. Each employee is responsible for their own safety as well as those working around them. Every employee must be thoroughly familiar with and must comply with all of the information in this manual.

A. All Employees

It is the duty of each employee to:

- Know procedures for emergency evacuation of the building.
- Know where the fire alarms, fire extinguishes, safety eye washes and showers are located and be familiar with their use.
- Review annually the Safety Manual, Chemical Hygiene Plan and the Blood Borne Pathogen Plan.
- Report observed hazards to supervisors, managers, and/or members of the Safety Committee, as applicable.
- Comply with all safety regulations applicable to his/her job.
- Complete all the necessary accident report forms for any accident, injury, or illness.
- Attend safety seminars presented in HEALTH as required by the Laboratory Supervisor.
- Comply with all warning and hazard signs.
- Comply with all safety regulations of the laboratory where he or she may be visiting or temporarily working.
- Be alert to and recognize potential hazards to safety and health, and when in doubt to request instructions as to how to proceed safely.
- Ensure that all visitors comply with safety regulations.
- Assist in training new employees in safety procedures.

B. Supervisors

In addition to the above, the Laboratory Supervisors are responsible to:

- Implement the safety policies and procedures of the Division of Laboratories.
- Ensure that all employees under their direction, including students, visitors, and summer personnel, are trained in all safety procedures and techniques required for each operation.
- Inspect the work environment and remove or correct hazards.
- Ensure that all accidents are reported and that necessary forms are properly completed and that an appropriate follow-up investigation is conducted.
- Comply with Chemical Hygiene Plan & Blood Borne Pathogen Plan.
- Update and Maintain a list of all substances covered under the Chemical Hygiene Plan which are used in ones' work area.
- Ensure that all chemical and biological waste, and other materials are disposed of in accordance with Rhode Island Laws, Federal Laws, the Management of Regulated

Medical Waste Protocol, the Chemical Hygiene Plan and the BloodBorne Pathogen Plan.

- ♦ Ensure that appropriate personal protective equipment (PPE's) are used by personnel and by visitors.
- ♦ Post warnings for employees and visitors of unusual or not obvious safety hazards such as, "Radiation", "Biohazard," etc. in accordance with the Chemical Hygiene Plan and the Blood Borne Pathogen Plan.

C. Section Chiefs

All of the above duties and the following:

- ♦ Investigate and follow-up on all accidents in their sections.
- ♦ Ensure employees receive initial and periodic training as required.
- ♦ Provide Supervisors with support and consultation on matters of safety training and enforcement.

D. Safety Officer

In addition to the above, the Safety Officer will act as an advisor to the Laboratory Director. Additional duties will include:

- ♦ Overseeing that the safety policies set forth in the manual and those set by the Laboratory Director are implemented in the Division.
- ♦ Aiding each supervisor and employee in matters pertaining to safety.
- ♦ Investigating accidents.
- ♦ Safety surveillance of the building as required and advising the Director and the Safety Committee, when applicable, of findings.
- ♦ Attending regular meetings of the Safety Committee. Advising the Safety Committee.
- ♦ Making other recommendations as appropriate and/or required to the Department of Administration and the HEALTH Health and Safety Committee.
- ♦ Maintaining safety training records

E. Associate Director of Health (Laboratories)

The Laboratory Director is ultimately responsible for the safety programs in the Division of Laboratories. To effectively carry out this responsibility, the Laboratory Director delegates certain responsibilities as outlined above. In addition, the Laboratory Director is responsible for:

- Establishing policies for the Division.
- Enforcing and regulating the safety program for the Division.
- Developing and maintaining procedures for proper disposal of hazardous and medical waste in accordance with Rhode Island Law.

F. Safety Committee

The purpose of the Safety Committee is to promote safety in the workplace. Its primary function is to assist the Laboratory Director in making recommendations for change. The Safety Committee consists of volunteers representing management and staff. Refer to the Safety Committee's Organizational and Operational Protocol (attachment # 1) for a full description of its structure, responsibilities, rules of conduct, etc. In summary, the Safety Committee is responsible for:

- Making recommendations for changes to improve the overall safety of laboratory functions.
- Reviewing the Safety Manual at least annually and making revisions as necessary.
- Reviewing and making recommendations for Safety Training.

V. GENERAL LABORATORY SAFETY RULES AND GUIDELINES

A. Basic Safety

1) Wear appropriate Personal Protective Equipment (PPE). If you are not sure what is appropriate, refer to the Standard Operating Procedure (SOP) or see your supervisor for guidance. Also see section IV. C (Clothing and Personal Protective Equipment) for further details.
2) Wash hands often, especially after handling potentially infectious materials, animals, or toxic chemicals and also before leaving the laboratory.
3) Wear appropriate gloves according the hazard present (for example, toxic chemicals, biological). Gloves should be worn particularly if the substance being handled is known to be readily absorbed by the skin or if the individual has a cut or wound on the skin.
4) Do not mouth pipette under any circumstances.
5) Shut off all gas cocks before leaving a work bench or laboratory area.
6) Never leave a flame untended.
7) Know the equipment, materials and substances you are working with. Read the operating manual, package inserts, compatibility charts, etc. to understand the proper procedures and techniques and potential dangers. If you are unsure, do not proceed.
8) Handle all spills using the correct procedure (see Chemical, Biological spill procedure section).
9) Know procedures for emergency evacuation of the building (see section VIII A. Fire Safety, Emergency Evacuation).
10) Know where the fire alarms, fire extinguishes, safety eye washes and showers are located and be familiar with their use (see attachment #2, floor plan).

B. Handling Glassware

1) Inspect glassware for starcracks, hairline fractures, sharp edges, and chipped rims. If faulty, do not use. Discard severely etched flasks, pipettes, etc.
2) Place broken glassware in an identified container.
3) Glassware must be stored in a manner that minimizes the potential for breakage. Thus, heavy objects must not be stored in drawers with fragile glassware.
4) Do not store glassware on open shelves where they be jarred or vibrated in such a manner that they will fall.
5) Do not carry large glass containers, full or empty, by the bottle neck. Support the weight from the bottom. Use approved plastic bucket or original shipping container to move bottles between lab.

C. Clothing and Personal Protective Equipment (PPE)

Appropriate personal protective equipment (PPE) including laboratory coats, gowns, smocks, eye guards, face shields, gloves, etc. must be worn while performing any procedure or engaged in an activity in which there is any potential to exposure to hazardous substances. Change PPEs immediately if they become contaminated with blood, body fluids or other hazardous material or if they become damaged in any way. If reusable laboratory coats are worn, use laundry services provided. If

disposable coats and gowns are used, place in the appropriate receptacle if they become contaminated or visibly soiled. Do not wear any PPE in areas such as the canteen, main office, the library common meeting rooms, or the solariums. Wear appropriate street clothing, which covers and protects the entire body from potential accidental exposure to hazardous substances**. Wear low healed shoes that cover the entire foot.**

D. Eye Safety and Showers

The Occupational Safety and Health Act of 1970 and good safety practices dictate that "Protective eye and face equipment shall be required where there is a reasonable probability of injury that can be prevented by such equipment. Suitable eye protectors shall be provided where machines or operations present the hazard of flying objects, glare, liquids, injurious radiation, or a combination of these factors." Suitable eye protection must be worn in areas where:

- Corrosive or caustic materials are handled
- Cryogenic materials & explosive materials are handled
- Hollow glassware is under vacuum or pressure
- Processes can produce aerosols of infectious agents

1) Use
    a. Plumbed/self Contained Eyewashes - Use the eyewash for 15 minutes, holding the eyelids open and rolling the eyeball.
    b. Personal Eye Wash Units - Use the personal eye wash unit for immediate use then move to a permanent facility, such as a plumbed/self contained eye wash or hand help drench hose and continue for 15 minutes.
    c. Emergency Showers - Remain under the shower for at least 5 minutes or more.
    d. Seek medical care if necessary.

2) Maintenance of Emergency Units

    All Emergency Showers, Self Contained Eyewashes, and the Drench Hoses will be tested quarterly by building maintenance personnel or designee to flush the lines and verify proper operation. The Personal Eye Wash Units have instructions and the expiration date attached to them. Individual laboratory staff must verify monthly that they have not expired and replace solution when necessary.

E. Electrical Safety

1) All electrical equipment must be grounded, double insulated, or safety approved. Report any damaged, frayed or spliced cords to the supervisor.
2) Do not attempt to use an instrument that is causing shocks. Small shocks often precede major shocks and a slight tingle may indicate potential trouble.
3) Know where the main control panel for your laboratory is located. Familiarize yourself with how to disconnect each circuit in case of an accident.
4) Do not block access to electrical control panels.

5) Extension cords should be avoided. If their use is absolutely necessary, they should:
    - Be the 3-way type and properly grounded. Gang plugs are prohibited.
    - Never be used on workbenches or the floor where any liquids are present.
    - Be as short as possible and in good condition - no breaks in insulation, etc.
    - Never be used in areas where they will be stepped on or tripped over.
6) Do not use portable electrical equipment if standing on a wet surface or if your hands are wet. Keep electrical equipment power cords and extension cords away from sinks and all other plumbing.
7) Pull on the plug, not the cord, when unplugging a cord from the power source.
8) **DO NOT** work on or attempt to repair any instrument while it is plugged in. If it becomes necessary to attempt repair on an instrument, be sure your hands are dry, remove all jewelry (watches and rings) and proceed with caution. For corrective actions, shut off the current and/or unplug the instrument
9) Repairs on the electrical system of the building are prohibited. Any work performed on switches, outlets, or circuit boxed (fuses, circuit breaker) must be referred to building maintenance personnel.
10) Follow the Lock-out/Tag-out protocol when equipment is not functioning and service is needed.

F. Office Safety

1) Keep walkways clear of clutter including recycle boxes, wastebaskets, electrical or phone cords, etc.
2) Use a stepladder to reach high places.
3) Get help to move heavy objects.
4) Report defective furniture and equipment to your supervisor.
5) File cabinets have been known to tip; keep open only one drawer at a time.
6) Use approved shelves for overhead storage.

G. Storeroom and General Storage Safety

1) All bottles of chemicals must be stored in an approved shipping container, bottle carrier, or labeled "safety carrier" when carried from the storage areas to the laboratories.
2) Glass containers of chemicals should be stored off the floor yet below eye level.
3) Aisles between shelving and stacks of supplies must be kept clear and clean.
4) Unpack shipping cartons carefully as broken glass or spilled chemicals are a potential hazard.
5) Do not store supplies, materials (shipping boxes, etc.) or excess equipment in the chase area. This area ***must remain clear*** for access to mechanical components (plumbing, electrical, etc.) and to provide access to emergency personnel in case of a fire or other emergency.

H. Equipment and Instrument Safety

Following are general rules and safety procedures for common equipment and instruments. They are designed to provide the employee with a basic knowledge and understanding of potential dangers. They are not intended to replace manufacturers' or other more detailed operating instructions.

1) Atomic Absorption Spectrophotometer

    a) Check Acetylene and Nitrous Oxide cylinders for operating pressures to see that they are within limits set by manufacturer.
    b) Use plastic, NOT copper tubing to connect acetylene tank
    c) Make sure burner head is securely attached to nebulizer housing.
    d) Keep door to nebulizing chamber closed until flame is lit.
    e) Do not look into flame for extended periods of time.
    f) Periodically check polyvinyl tubing to nebulizer for possible ruptures.
    g) Be sure burner heads are cool before changing.

2) Autoclaves

    a) Personnel instructed should not operate autoclaves until they have been trained in the proper operation of the instrument.
    b) Do not open until both temperature and pressure readings are back to acceptable ranges as indicated on the gauges. Make sure intake steam valve is off before opening.
    c) Report any malfunction immediately.
    d) Loosen caps of any containers to allow equalization of pressures inside containers. This prevents explosions, boil-overs, and implosions.
    e) Use thermal gloves when putting items into or removing items from the autoclave. The sides and door may be hot in addition to the material being autoclaved. NOTE: Beware of steam that will permeate thermal gloves! Do not allow hot bottles to be jolted. This can cause hot-bottle explosions. Do not move bottles if any boiling of bubbling of fluid is present.
    f) When sterilizing liquids, use "Liquid" cycle. No other cycle is safe for liquid sterilization.
    g) Check the pressure in jacket and chamber daily. Clean the drain as needed.
    h) Bags or containers holding materials to be contaminated should have autoclave tape affixed to them to serve as an indication that these materials have reached proper sterilization pressure. If the tapes have not changed to indicate this, the materials should be re-autoclaved until decontamination is ensured before discarding.

3) Centrifuges

    a) Do not operate centrifuge unless the cover is closed and the centrifuge has completely stopped.
    b) Do not centrifuge uncovered tubes of specimens such as blood, urine, sputum or flammable liquids. Use appropriate tubes and safety carrier heads.
    c) Use only tubes specially designed for centrifuging.

d) Place tubes in a symmetrical pattern so as to balance the centrifuge head.
e) Be sure that carriers placed in a pivot-head centrifuge will clear center post when they swing into horizontal.
f) Keep centrifuge speeds (RPM) within the text specifications, the tube manufacturers' recommendations, or the centrifuge manufacturers' recommendations.
g) Do not pick up any broken glass with bare hands.
h) Use an explosion-proof centrifuge when separating suspensions from flammable liquids. Keep sparking (metallic contact) timers as far from operating explosion-proof centrifuges as power cords will permit.

4) Compressed Gases

a) Storage - Storage should be in a safe, dry, well ventilated place and at not more than 130 degrees F. Cylinders should be stored in an upright position, firmly secured, valve safety covers in place and grouped according to contents.
b) Return empty cylinders to the storage area to the specially marked bin for empties. Do not store empty cylinders with full ones.
c) Cylinders should not be rolled on the bottom edge. Transport large cylinders by means of a wheeled cart. Secure cylinder to the cart and make sure the valve cover is in place.
d) Cylinders should be handled with care. Do not remove or tamper with safety devices in valves.
e) Do not attempt to repair damaged cylinders or to force frozen cylinder valves. Return the cylinder to the supplier.
f) Valve safety covers must be left on the cylinder until secured at the work site and pressure regulators are attached.
g) There are standardized outlets for different families of gases to prevent interchange of regulator equipment between gases that are not compatible. The use of adapters defeats the intent of these standards. Adapters should be used only when there is known to be no compatibility problem. Regulators used on other gas systems should never be adapted for use on an oxygen cylinder. Gases that are oil pumped can leave an oil film on the inside of regulators and other equipment, and if oil is exposed to oxygen, a fire or explosion can occur.
h) Never crack the valve to determine if the cylinder is empty without using a regulator.
i) Open valves slowly. Do not stand directly in front of gauges, as the gauge face may blow out. Do not force valves that stick.
j) Cylinders and connections should be tested for leaks by "snoop" or a soap solution. First test the cylinders before regulators are attached and test again after the regulators or gauges are attached.
k) The maximum rate of flow should be set by the high pressure valve on the cylinder. Fine turning of the flow should be regulated by the needle valve.
l) Know the gas you are handling and the properties of a compressed gas that represent hazards such as flammability, toxicity, chemical activity, etc.
m) Do not handle oxygen cylinders and fittings with oily hands, gloves or clothing.

n) When empty, mark cylinder "EMPTY" or "MT", replace the valve cover and return to gas storage area.

5) Gas Liquid Chromatograph & Mass Spectrometers

a) Check all heated zones, vacuum gauges, and gases daily to ensure proper operation of the system.
b) After replacing a gas cylinder check all gas lines for leaks. Stop the leaks before using the equipment.
c) Inspect all exposed wires and electrical plugs for fraying, broken wires, and chipped plugs. Do not use the GC until repairs are made.
d) Properly support the purge cylinders and place the supply lines out of the way.
e) Care should be taken so that hands are not near the injector needle during sampling of sample vials.

6) Graphite furnace atomic absorption spectrophotometer

a) Never look directly at a furnace head or cuvette without proper protection (UV glasses).
b) Verify that the cell head door is functioning correctly prior to atomization.
c) Never touch the cell head during atomization.
d) Power down instrument prior to troubleshooting.
e) Allow sufficient cool down time for all graphic parts (cell head, windows, washers, sapphire window) before handling.
f) Ensure that the hood exhaust is functioning to remove any toxic vapors that would occur during atomization.
g) Drain air compressor daily.

7) Biological Safety Cabinets (BSC) and Fume Hoods

Biological Safety Cabinet (BSC)

a) Before using, check to ensure that airflow is within limits as defined by the hood specifications.
b) Notify laboratory supervisor immediately if airflow is not within range or lighting is insufficient.
c) Do not allow air turbulence to be created in front of the cabinet. Turbulence may be caused by traffic (people, equipment, and etc.) passing in front of the unit, exhaust fans, etc., in use near the cabinet and will cause eddy currents permitting the escape of material from the cabinet.
d) Do not overload cabinets with apparatus or work material.
e) Handle all chemicals and materials carefully. Do not use toxic or explosive chemicals
f) Maintain a regular schedule of certification.

Fume Hoods

a) Check direction of air flow before using hoods to make sure it is flowing into the cabinets. To do this, attach small tell-tales indicators to each end of the window sash.
b) For those hoods equipped with electronic indicators, the minimum face velocity must be at least 100 LFM.
c) Notify the laboratory supervisor when air flow is not sufficient and do not use the hood until the problem is rectified.
d) Do not overload hood with apparatus or chemicals.
e) Maintain a regular schedule of certification.

8) Ultraviolet (UV) Radiation equipment

UV radiation is encountered in atomic absorption spectrophotometer (ASS), fluorimeter, UV spectrophotometer, germicidal lamps, and in both long and short wave UV lamps.

a) Be sure the proper filters and shields are in place before turning on the instrument.
b) Never look at UV light from any source, direct or reflected, without proper eye protection.
c) Keep skin exposure to UV radiation to a minimum.

9) Vacuum Pumps

Be sure there is adequate vapor-free ventilation around the motor of all operating vacuum pumps. The motors spark slightly on start-up and shut-down and could ignite flammable vapors. Also, ensure that the pump has lubrication to allow for adequate operations and follow the pump manufacture's instructions.

I. Working Alone

Working alone in any industry or occupation carries the additional risk of not receiving appropriate help in the event of an accident or illness. In the laboratory science field this is especially true in view of the materials handled and procedures performed. For this reason, attempts will be made by management to organize work units to include at least two persons. Management will also consider safety issues as criteria for assigning after-hours work. Additionally, the HEALTH Laboratories have purchased several cell phones. If after-hours work is necessary, contact your supervisor to request one. Finally, Management has added panic buttons in each laboratory that are connected directly to ADT Security Services. If activated, ADT Security will contact the Capitol Police to respond. In spite of these measures, it is necessary to place restrictions on the following procedures or practices while working alone:

1. Do not handle any liquefied gases, i.e. liquid N2

2. Do not repair or replace an electrical or electronic component.

3. Do not handle bulk reagents, solvents or heavy objects.

4. Do not use open flames, i.e., Bunsen burners.

Management and the Safety committee regularly assess other procedures and practices. Until additional guidelines are established, employees may discuss specific concerns with their supervisors, section chiefs or Safety Officer.

VI. CHEMICAL SAFETY

The following discussion on chemical hazards will provide laboratorians with an understanding sufficient to instill caution. Refer to Material Safety Data Sheets (MSDS), the Chemical Hygiene Plan and other resources for additional descriptions of chemical hazards and safety precautions.

A. Categories of Chemical Hazards

Caustic or Corrosive: Substances, which may cause burns, including acids and alkalis.

Poisons: A substance that may cause death or serious injury if relatively small amounts are inhaled, ingested or come in contact with the skin. Poisons may be solid, liquid, or gas.

Carcinogens: Substances designated by OSHA as carcinogenic if they are known as potential cancer-causing agents

Flammables: Such materials that easily ignite, burn and serve as fuel for a fire.

Explosives: Materials that may explode under special circumstances.

B. Chemical Labeling

Label all chemicals, with a durable material, with the following information:

a) The exact name of the chemical and its concentration.
b) The date the chemical was received or prepared.
c) The initials of the person preparing the chemical.
d) Expiration date
e) Hazard warnings
f) Include other information such as precautions to be observed, and instructions that are necessary to ensure safe handling.

Note: Display signage indicating the presence of chemical hazards in the laboratory. Much of the chemical hazard information may be obtained from the MSDS's, MERCK Index, The CRC Handbook of Chemical Safety, or Dangerous Properties of Industrial Material by Irvine Sax, or elsewhere in this manual.

C. Storage of Chemicals

To prevent accidental breakage and mixing of reactive chemicals that may result in severe personal injury or property damage, proper storage is necessary. As a general guideline:

1) Establish an inventory control system.
2) Routinely check all chemicals and dispose of old chemicals no longer in use or that may have become dangerous; e.g., crystallized picric acid. Aqueous

chemicals have a 2 year expiration date and dry chemicals have a 5 year expiration date.

3) Limit storage within the laboratory to the smallest practical quantity.
4) Storage within a fume hood must be limited to prevent interference with the operation.
5) If the hood is used for storage, the fan must be left operating at all times.
6) Following is a general guideline for storage of chemicals:

- Store solvents in a vented cabinet near the floor provided with a tray that will retain any solvent that might be spilled.
- Store corrosive liquids close to but **not on the floor** and not with cabinets that contain gas lines. Corrosive materials cause erosion and the destruction of structural integrity. Beside acids, such materials include acid anhydrides and alkalis. Containers and labels must be checked routinely.
- Separate acids and strong bases and separate organic acids from strong mineral acids. All should be placed on separate trays.
- If perchloric acid is used, prevent contact with any organic materials. Segregate perchloric acid on glass trays and wash daily.
- Store organic acids(acetic acid and acetic anhydride) separately from strong oxidizing agents (sulfuric, nitric, or perchlorate) to prevent interaction of fumes and corrosion of storage cabinets.
- Separate acids from substances that react to evolve heat, hydrogen, or explosive gases.
- Store the main bulk of chemicals on lipped shelves or in cabinets. Room should be well vented.
- If any strong oxidizing agents are used, store in a separate storage area because they present a potential fire or explosion hazard.
- Separate strong oxidizing agents from combustible materials, organic solvents, metal powders, metal hydrides and phosphorus.
- Plan the storage area with consideration for emergency egress, access to safety showers and eye wash, and spill kits.
- Always return chemicals to their proper place immediately. Never store chemicals on the floor or even use the floor for temporary storage of empty bottles.
- Do not block the aisles or exits of the storeroom
- Clearly mark room exits
- Quantities of flammables of one gallon or over must be stored in a safety can. Do not store flammables in a refrigerator unless the refrigerator is explosion proof.
- Flammables must not be stored with corrosive, toxic or reactive chemicals.
- Do not store opened cans of ether in a closed area such as a refrigerator.
- Small quantities (working amounts) of flammables may be stored on open shelves, but bulk storage (more than 5 gallons) must be in a safety storage area.
- Store solvents in a cool area, maximum temperature of 80 degrees F. Transfer solvents in a working fume hood.
- Store flammable liquids in a metal fire protection cabinet
- Have proper fire extinguisher at hand and know how to use it.

D. Transport of Chemicals

1. Transport flammable and corrosive chemicals, over 1 quart in size, in safety carriers.
2. Transport large containers, such as carboys, on carts.

E. Handling:

1. Acids and Bases

   a) **DO NOT ADD WATER TO CONCENTRATED ACIDS OR BASES**. Add acid or base to water slowly and allow it to run down the side of the container and mix slowly by gentle rotations.
   b) Have **Universal Absorbent Pillows** readily available when using strong acids and bases.
   c) Use personal protective equipment such as glasses, gloves, and aprons. Work in a sink or behind a barrier, if possible.
   d) Do all decanting of concentrated acid in a well-ventilated hood.
   e) If acids are spilled on skin, wash immediately with large amounts of water. When evaporating or digesting acid solutions under a hood keep them covered with watch glasses to prevent spattering. Use boiling chips to avoid "bumping."
   f) Alkalis can burn the skin and eyes severely. They are as corrosive to tissue as acids, and in some cases more so. Use a hood to protect respiratory tract against alkali dust, droplets, or vapor.
   g) Never work with large volumes of strong acid or base unless emergency assistance can be readily obtained.

2. Explosives

   When working with explosive chemicals, take every precaution to avoid flames and sparks (no hot plates, no rheostats).

3. Flammables

   a) Use effective vapor removal systems and take precautions against igniting flammable vapors.
   b) Perform distillations, extractions, and evaporations behind a safety barrier and with effective fume removal such as in a fume hood with the door lowered.
   c) Use water aspirator and ice-cooled trap, not a vacuum pump, when vacuum filtering suspensions in flammable liquids.
   d) Set up apparatus on firm supports and secure all connections. Leave ample head room in the flask and add boiling chips before starting to heat.
   e) Work with flammable reagents only under a fume hood in a well ventilated area clearly designated for such work. Remove all sources of sparks and flames from the area. Rinse empty containers with water after they have been emptied of flammables.

F. Disposal of Chemicals

1. All hazardous wastes must be disposed of in accordance with RIDEM regulations for hazardous waste disposal. Package all lab-generated hazardous waste as specified in the Chemical Hygiene Plan in the individual laboratory and mark the percentage of waste on tags. When full, transport the container to the chemical room.
2. Do not pour volatile solvents down the sink. Subsequent use of hot water can cause them to boil back out of the sink. Also, vapors can accumulate in the basin.
3. Never dispose of toxins, such as mercury, down the drain. Instead, contact the laboratory Safety Officer for instructions.
4. Contact the Safety Officer for instructions for disposal of Ethyl Ether suspected of containing decomposition materials (peroxides).
5. Neutralize all spent acids and bases to pH 5-10 using approved methods and then flush with water down the sink drain.

G. Spill Procedures.

1. Know where eyewashes and showers are before you start working.
2. Know the hazards of the chemicals. Refer often to Material Safety Data Sheets (MSDS) and container labeling.
3. If you spill something on your skin or in your eyes, flush immediately with water for 15 minutes. If necessary, get medical attention after washing.
4. If you spill anything caustic or corrosive on your clothes, remove the contaminated article immediately. Undue modesty may result in painful burns.
5. If there are injuries or if medical attention is needed, dial 911 immediately. If an exposed individual is unable to respond, assist them if you can do so without putting yourself at risk.
6. Report all accidents or injuries to a supervisor as soon as possible.
7. Alert others in the area of the spill. Isolate the area and deny entry to others to keep exposure to a minimum.
8. Determine the severity of the spill. Generally, the spill can be considered to be minor if the chemical does not have the potential to cause severe health consequences if individuals are exposed to the released volume. Also, if the spill is easily contained, if the vapors do not create an explosion hazard and/or the potential for affecting other personnel through dispersion through the air handling system. The reverse is true in determining the spill to be major .*
9. If you determine that the spill is a MINOR SPILL, proceed as follows:
   a) Don proper protective equipment -- safety goggles or face shield, gloves, boots and lab coat. Eliminate all sources of ignition.
   b) Contain and absorb the spilled chemical using universal sorbent pillows.
   c) For mercury spill, use the mercury spill kit that is kept in the Water Chemistry Lab (room 311).
   d) Retain all contaminated material for proper disposal. Insure that emergency equipment, clothing, etc. has been properly decontaminated.
   e) Replace used universal sorbent pillows.
10. If you determine that the spill is a MAJOR SPILL, proceed as follows:

a) Evacuate the building. If there is NO FIRE HAZARD, use the overhead paging system to evacuate the building. Instruct the laboratory administrator, maintenance representative, or management to contact Buildings and Grounds to request ventilation to be switched to 100% fresh air.
b) If there is a FIRE HAZARD, pull the fire alarm for a fire emergency.
c) Notify the Supervisor and/or a Section Chief of the nature of the spill.
d) The Supervisor or Section Chief must contact the Chemical Hygiene Officer who will assess the nature of the spill and if necessary, contact the appropriate emergency chemical clean-up responder.
e) Meet an emergency responder at front door and brief response personnel on incident and arrange for containment and clean up. Response personnel will oversee the cleanup from start to finish. Insure that emergency equipment, clothing, etc. has been properly decontaminated.
f) As required by RI Department of Environmental Management, prepare a written report(narrative) on the incident that fully describes the spill.

H. Carcinogens

All employees working with, or who may be potentially exposed to, chemical carcinogens should receive sufficient information that will enable them to work safely and to understand the relative significance of potential hazards. Contact your supervisor for this information.

VII. MICROBIOLOGICAL SAFETY

A. Introduction

Microbiological safety pertains to the containment and control of infectious microorganisms to prevent laboratory-acquired infections. In order to prevent laboratory-acquired infections, it is absolutely essential to treat all specimens as being potentially infectious and perform analyses using proper technique and good common sense. The most common causes of laboratory infections are:

a) Accidental aspiration of infectious material from a pipette.
b) Accidental inoculation with needles and syringes.
c) Animal bites.
d) Spray from syringes.
e) Centrifuge accidents.

B. General Microbiological Laboratory Safety Procedures:

Following are general guidelines for working with Biological Hazards. Refer to the Bloodborne Pathogens Exposure Control Plan (available from the Biological Sciences Section Chief) and to individual laboratory safety protocols for a complete and detailed description of safety requirements and methods for preventing and treating exposures to bloodborne and other pathogens:

1. Wash hands frequently, especially after removing gloves. Develop the habit of keeping hands away from mouth, nose and eyes.
1. Do not eat, smoke and drink or apply cosmetics in the laboratory.
2. Keep work areas clean and counter tops clear of all unnecessary clutter. Try to keep all surplus materials and supplies out of infectious areas. Do not use work areas for storage.
3. Do not store food and beverages in laboratory refrigerators or freezers in which any samples, specimens, or reagents are stored.
4. Keep a container of disinfectant in any area where infectious materials are handled.
5. Clean all work surfaces with a disinfectant in the morning before beginning work, in the afternoon after work is finished, and always after any type of spill.
6. Do not mouth pipette.

C. Specimen Handling and Processing

1. Use appropriate PPEs when handling and processing all biological and clinical specimens.
2. Treat all specimens as being potentially infectious. Use careful technique at all times.
3. When transporting specimens between work areas and/or between laboratories, use an approved spill-proof carrier and place specimens on a cart.

3. Cover centrifuged materials in a sealed cup to prevent aerosol formation.
4. Avoid splattering of infectious material when flaming loops, needles or spreaders. Never place a hot loop in a liquid culture or on an agar surface containing microorganisms.
5. Exercise extreme caution when using sharp instruments such as scissors and needles. Never re-cap used needles.

D. Decontamination and Disposal

Refer to the RI Department of Health Management of Regulated Medical Waste document for a complete description of disposal procedures.

E. Equipment Safety

1. Check airflow, ultraviolet light intensity, and temperature of sterilizing equipment periodically or when otherwise indicated to insure that safety equipment is performing properly.
2. Periodically check the hose of burners.
3. Secure all compressed gas cylinders properly.
4. Inspect all centrifuge tubes prior to use.
5. Balance centrifuge tubes before centrifugation.
6. Do not stop centrifuge rotors by hand.
7. Decontaminate equipment in infectious areas before having it serviced or repaired.

F. Exposure to Bloodborne Pathogens

Refer to the Bloodborne Pathogens Exposure Control Plan for a complete description of preventative methods to avoid exposure as well as the response plan for dealing with employee exposures.

G. Immunizations

1. All personnel required to perform rabies tests must be immunized against rabies. This immunization is arranged by the Virology Supervisor and the Disease Control and Prevention staff. Records will be kept by the State Epidemiologist.
2. As described in the Bloodborne Pathogen Exposure Control Plan (BPP), all personnel (including interns, students) working with human body fluids will be offered immunization against hepatitis B. Records will be kept by the State Epidemiologist.
3. It is recommended that all personnel with exposure to mycobacterial specimens be skin tested every six months to one year, depending on the level of potential exposure. Records will be kept by the State Epidemiologist.

H. Spill Procedure

1. Clean and decontaminate all spills immediately.

Dry spills

"Dry Spills" such as overturned or broken culture plates that involve no significant aerosol formation should be handled as follows:

a) Notify the supervisor immediately.
b) Wear appropriate personnel protective equipment (PPE).
c) Flood the area with a disinfectant solution. Allow to soak for several minutes.
d) Soak up the disinfectant and contaminated material with an absorbent material such as paper towels.
e) Place the material in a biohazard bag or sealed biohazard container.
f) Dispose of the material according to the procedures described in the Management of Regulated Medical Waste document.

Liquid Spills

Liquid spills on the bench or floor produce an aerosol. If an infectious aerosol may have formed, complete the following:

a) Evacuate the area and do not re-entered for at least an hour.
b) Notify the supervisor immediately.
c) After an hour has passed, re-enter the area and don appropriate personal protective equipment (PPE).
d) Cover the spill with paper towels. Wipe up the spill then place the material in a biohazard bag or sealed biohazard container.
e) Again, cover the spill with paper towels then flood the area with appropriate disinfectant (ex. 10% bleach).
f) Soak up the disinfectant and contaminated material with an absorbent material such as paper towels and place in a biohazard bag or sealed biohazard container.
g) Dispose of the material according to the procedures described in the Management of Regulated Medical Waste document.

Major spills

A major biological spill is one in which the pathogenic microorganism involved and the volume of the spilled material has the potential to directly contaminate individuals throughout the building through dispersal of an aerosol. If you suspect that a major spill has occurred, complete the following:

a) Contact the Supervisor or Section Chief immediately.
b) Use the overhead paging system to evacuate the building. Instruct the laboratory administrator, maintenance representative, or management to contact Buildings and Grounds to request ventilation to be switched to 100% fresh air.
c) When sufficient time has passed, the Supervisor will direct the clean-up operation as described above (spill procedure).

Centrifuge and other spills

In the case of centrifuge spills, shut off the instrument and follow the procedure as described in the case of liquid spills (above). Clean the instrument and room thoroughly before resuming work. For spills in incubators or other closed areas, follow the procedure as described in the case of liquid spills (above). If routine cleanup is not possible, the unit may have to be decontaminated with a sterilizing gas such as formaldehyde or glutaraldehyde. For this sterilization process, contact the equipment manufacturer for complete instructions.

VIII. RADIATION SAFETY

A. General Radiation Safety Procedures

1. All persons handling radioactive materials should be familiar with the contents of National Bureau of Standards Handbook # 92, "Safety Handling of Radioactive Materials".
2. Suitable shielding must provide adequate protection for personnel.
3. Wear appropriate PPEs.
4. Properly identify all radioactive materials and guard against unauthorized removal. Identification shall be in accordance with the inventory control program specified.
5. Keep current records of receipt, use, transfer and disposal of radioactive materials in a specified format. Records will be considered adequate when all materials are accounted for any given time from the inventory records alone.
6. Label all tubes, flasks, and contaminated containers with special "yellow radioactive stickers". Rinse tubes thoroughly before disposal into waste. Pour the rinsing fluid into the radioactive waste disposal.
8. Work with radioactive materials only in designated areas that have the yellow radioactive sign posted.
9. Empty liquid radioactive materials into the sanitary sewer system after the material has decayed through seven half lives.

IX. ACCIDENTS AND EMERGENCIES

A. Fire Safety

1. Evacuation Procedures
   a) Upon discovery of a fire, immediately pull the fire alarm box, located at the front and rear of each floor, near the stairwells.
   b) If the fire is minor in nature, that is, one that is small and non-explosive or toxic, an attempt to extinguish it may be made.
   c) When the fire alarm rings, evacuate the building using the nearest stairway or fire exit. ***Do not attempt to use the elevator because it automatically shuts down during a fire emergency.***
   d) Follow the evacuation routes shown on the building floor plan posted in each laboratory (see attachment #2).
   e) Immediately after evacuation, gather with your work area staff on the front lawn of the building. If you left the building from the rear staircase and need to walk to the front lawn, make a wide sweep of the building. To do this, enter the Channel 6 parking lot and make your way up to Orms Street, then back onto the front lawn.
   f) Do not leave the premises in your car, or attempt to move your car to a different location.
   g) The supervisor or designee (next senior staff) must take a head count and report to the Lab Director. If not available, contact the Lab Administrator or other management staff who is assuming overall supervision of the evacuation.
   h) The switchboard operator, upon leaving the building, will bring the visitor log and the laboratory "chemical list" outside and provide it to the Lab Director or management staff that is assuming overall supervision of the evacuation.
   i) The Lab Director or management staff that is assuming overall supervision of the evacuation will record the attendance on an employee checklist and in the visitor logbook.
   j) The Lab Director or management staff that is assuming overall supervision of the evacuation will meet with the arriving emergency response commander to apprise him/her of the situation. Detail any information that is known about the source of the emergency, types of materials involved, missing persons, etc.
   k) Upon direction from the emergency response commander, the Lab Director or management staff that is assuming overall supervision of the evacuation will notify staff when it is safe to re-enter the building. .

2. Fire Safety Equipment
   a) Fire alarm boxes – Located at the front and rear on each floor, near the stairwells.
   b) Heat resistant gloves – Use to handle small burning objects or turn off hot valves or handles. CAUTION – Steam or hot liquids may permeate gloves and cause injury.
   c) Fire Extinguishers – Three extinguishers are located in each corridor of the building. These are multi-purpose dry chemical fire extinguishers which can

be used for all three types of fires A, B, and C: flammable liquids, electrical and combustion.

3. Proper use of fire extinguisher: (remember the acronym PASS)

   a) PULL – Pull the pin.
   b) AIM – Hold firmly in upright position and aim at base of fire.
   c) SQUEEZE – Squeeze or press the handle.
   d) SWEEP – Sweep from side to side at the base of the fire. Move forward as fire diminishes to reach the far edge of the fire. Discharge contents of extinguisher.
   e) Never move into an area where fire was burning, even though it appears to have been extinguished. You could be trapped if the fire re-flashes.
   f) Never use an extinguisher at a distance of less than 6 feet.
   g) Never attempt to extinguish a solvent fire of more than 4 square feet. Evacuate instead.

4. Control of Fires
   a) Evaluate size of fire – if large, EVACUATE! Only attempt to control small, isolated fires.
   b) Solid Combustibles – handle with heat resistant gloves
   c) Flammable liquids – use absorbent pillows on liquids which have spilled to contain spread and reduce fire hazard
   d) Electrical – Do not use water
   e) Gas – shut off source if possible
   f) Smother metals or metal hydrides such as magnesium, aluminum, sodium, potassium, and other metals or metal hydrides with dry sand or soda ash. Do not use water.

5. Fire Prevention
   a) Potential Ignition Sources – open flames, heating elements and spark gaps (motors, light switches, friction, static). Keep ignition sources away from all areas where flammable liquids are used and/or stored.
   b) Flammable liquids – Keep away from ignition sources. Storage should be in accordance with the Chemical Hygiene Plan. Use safety carriers for quantities over one gallon. Storage areas must be labeled “Flammable – Keep Fire Away”.
   c) Keep all egress doors closed at all times; in other words, “Do not prop doors open with wooden wedges, etc.”

B. Bomb Threats

1. If a threat is received via telephone, attempt to obtain as much information as possible from the caller. (such as time set to detonate, location etc.)
2. Notify the Laboratory Director, he/she may elect to evacuate building.
3. The Laboratory Director will notify fire and police departments and state fire marshal’s office.
4. When notified to evacuate, walk quickly and calmly to the nearest exit. Do not use elevators.

5. Go immediately to your unit's designated area for a head count.
6. Do not re-enter the building until you receive clearance from the Fire Department and/or administration.

C. Elevator Malfunction

1. When a malfunction occurs, there are built-in safeguards that automatically activate and "lock" the elevator in place. Whenever this occurs, remain calm. Use the telephone in the elevator to contact the switchboard (x5600) during normal business hours. If the emergency occurs outside of normal hours, try to contact boiler room personnel (x5519). Otherwise, call the HEALTH after hours on-call administrator (9-272-5952) or an emergency responder (911).
2. Remain in the elevator until the trained elevator specialists arrive. Do not try to leave an elevator while the elevator agency is attempting to clear a malfunction.

D. Accidents and Emergency Procedures

1. When an accident or an injury occurs, alert others in the immediate area. Notify the supervisor, chief, and/or building administrator.
2. If the situation appears to be life threatening, call for help immediately. (Dial 911, then call the front desk and inform the operator where the emergency is so they can direct the rescue squad to the correct location).
3. If the situation is clearly not life threatening but medical care is required, arrange to have the person transported to the nearest emergency care facility.
4. First aid can be performed by other employees if the injury is clearly not critical and is clearly superficial in nature. First aid kits are supplied in some laboratories and in a central location on each floor (wall mounted).
5. Complete an *In House Accident Form* as soon as reasonably possible when an injury occurs (see attachment #3).

X. REFERENCES

RI Department of Health, *Safety Manual* 1983

Connecticut State Laboratory Safety Manual

XI. ATTACHMENTS

Attachment #1- Safety Committee Organizational and Operational Protocol

HEALTH Laboratory Safety Committee
Organizational and Operational Protocol

Safety Policy Statement

It is the policy of the HEALTH Laboratory to protect the safety and health of our employees. Our facility has established a safety and health program adapted to fundamental occupational safety and health concepts that will help us prevent injury and illness due to hazards. To accomplish this task, a joint worker/management safety committee has be established.

Purpose

The purpose of the safety committee will be to bring workers and management together to promote safety in the work place. This safety committee will assist the Lab Director in making recommendations for change.

Organization

There shall be a minimum of 4 and maximum of 6 employees and a minimum of 2 and maximum of 3 management representatives. The 2 Labor Unions shall select 2-3 representatives each at their discretion. If the respective unions make fewer than 2 selections, then the Laboratory Director will appoint the remaining person(s). The Laboratory Director will appoint management representatives.

Currently, term limits are undecided.

A member, if absent at 6 or more meetings in a one-year period, will be dismissed and a replacement will be sought.

The committee will elect a Chairperson and a Vice-Chairperson. If no persons are nominated for any one of these positions, then the Lab Director shall appoint member(s).

The laboratory Safety Officer is encouraged to attend each meeting.

Lab personnel other than committee members may be invited to, or request audiences, at committee meetings to present evidence, etc. These requests will all be directed through the chairperson, who is responsible for developing and distributing meeting agendas.

The quorum of members necessary for holding a meeting shall be at least 2/3 of the membership. In the case that 2/3 of the membership does not equal a whole number (ex. 8 X 2/3=5.3), then the number shall be rounded to the lowest whole number. For simplicity, if the membership is 6, quorum requirement is 4. If the membership is 7, the quorum requirement is 4. If the membership is 8, the quorum requirement is 5, and if the membership is 9, the quorum requirement is 6. Of the members present, at least 1 representative shall be from each union and one from management.

Duties

Committee members

1. Attend all meetings.
2. Participate in forming recommendations for improving safety.
3. Completing assignments given to them by the chairperson.
4. Present all safety issues or concerns brought up by personnel.

Chairperson

1. All of the duties listed above.
2. Prepare the meeting agenda and distribute prior to the meeting.
3. Arrange the meeting times and place.
4. Notify members of the meeting.
5. Conduct the meeting.
6. Submit committee recommendations to the Lab Director.
7. Maintain an issue tracking system to monitor the status of issues.

Vice Chairperson

Same duties as listed above. The role of this person is to serve in the absence of the Chairperson.

Clerical

The Lab Director will provide clerical support. This person will take the minutes of the meeting, prepare the minutes in a concise format, and submit them to the Chairperson for review and distribution. In addition, this person may be used to prepare edits of the Lab Safety Manual, and/or to prepare similar documents as needed.

Functions

- Assessment of safety and health training
- Safety Manual updates and revisions
- Monitor the individual lab units' adherence to the Safety Manual's policies and procedures
- Address safety issues or concerns brought up by personnel

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Meeting Procedure

The committee's plan of action requires procedures by which the committee may successfully fulfill its role. Each meeting shall proceed as follows:

1. Conduct elections if necessary.

2. Proceed with functions.
    - Review of issues brought up by personnel
        - Ongoing issues. Discuss status, actions, etc. Develop proposals to present to management.
        - Discuss new issues. Decide on a plan of action, give assignments if necessary.

3. Work on other functions (listed above, as prioritized by the Committee)

4. Discuss other business (if any).

5. Set date and time for next meeting. Close meeting.

Rules of Order

As stated in the "Duties" section, the Chairperson shall conduct the meetings. All issues or business brought to the floor shall first be discussed. Each member will be given the opportunity to present his/her viewpoint or thoughts. The Chairperson will gauge the consensus opinion and help mold a cohesive policy statement or appropriate language. A request will then be made by the Chairperson for a member to bring the item to the floor for a motion. The chairperson will ask that a motion is seconded and lastly, the Chairperson will call for a vote. If the motion secures a majority vote, then it will be accepted and recorded as such. Alternately, if the Chairperson recognizes that all members are in agreement on an item, he/she may announce that the Committee has accepted the item and it will be accepted and recorded as such.

Record keeping and Communication

<u>Recording minutes</u>

As stated in the next section, the Safety Committee will record minutes at each meeting. These minutes will include a clear description of each topic, discussions, and plans for action and final recommendations, if appropriate. After the minutes are compiled the Chairperson will review them and edit if necessary. The Chairperson will distribute the minutes to members prior to the next scheduled meeting. He/she will also provide an electronic copy to the Vice-Chairperson who is responsible for copying relevant excerpts into appropriate issue tracking documents.

At the beginning of each meeting, the Chairperson will call for acceptance of the previous meeting's minutes. If there are exceptions to the content, the matter will be discussed and, if necessary, the document will be amended.

Issue Tracking

An issue tracking system will be implemented. This system of record keeping will begin after an issue has been introduced at a meeting. An issue number will be assigned, beginning with the year, then sequentially numbered (ex. 01001). The date opened and any recorded minutes will be the first items established. Subsequently, any and all minutes generated on the issue will be added to the document. When a consensus is reached on a final recommendation (action), the Chairperson will be responsible to write this recommendation and present it to the Laboratory Director. As stated under the *Scope of Responsibility* and *Accountability* sections in the Protocol, the Laboratory Director will be asked to respond to the recommendation(s) in writing in a timely manner. The Lab Director may accept/reject recommendations, accept recommendations with modification or make a request for alternate proposals. When this response is received, it will be included with the issue-tracking documents. The committee will then consider the response and take appropriate action as shown on the Issue Investigation and Remediation Flowchart. The issue will be placed in the "closed" category (notebook) when the committee has decided that the issue has been thoroughly researched, presented, resolved and/or otherwise dispensed of. All issue tracking documents will be placed in the "closed issues" notebook. The Lab Director will be notified of the final action.

Scope of Responsibility

It must be clearly understood that the safety committee advises management on issues that will promote safety and health in the work place. Written recommendations are expected from the safety committee and they will be submitted to the Lab Director. In turn, the Lab Director will consider the recommendations submitted, and will respond to the committee within a reasonable time.

Accountability

As stated under the duties section, each member must commit to achieving the highest level of safety possible in the HEALTH Laboratory. If any committee member recognizes that another member is not performing the duties as listed above, the Chairperson may be asked to list the non-performance of duties of that individual as an agenda item. If, after suitable discussion, ¾ of the membership agrees that a member is not performing the duties as stated under the "Duties" section, he/she may be asked to improve their performance or consider resignation.

The Lab Director must commit to considering seriously all written recommendations from the committee and making necessary policy decisions and/or requests for additional information in a timely manner. In addition, the Lab Director understands that safety committee meetings, tasks and assignments will require a reasonable amount of time away from regular duties and supports dedicating the proper resources, if available.

References:

Guidelines for State Employees Worker's Compensation Health and Safety Committee Outline

RI Dept of Labor and Training Education Unit *Guide to Developing and Implementing a Safety Committee*

Agreement between the State of RI/DOH and Professional Staff Association/NEARI contract Article XXIX, 29.6

Agreement between the State of RI/DOH and AFSCME Council 94 contract Article 28, 28.2

OSHA Standards- Laboratory Standard 29 CFR 1910.1450, Blood Borne Pathogen Standard 29 CFR 1910.147 and Lockout/Tagout 29 CFR 1910.14

Acceptability

The Laboratory Director hereby accepts the organization and operation of the Safety Committee as proposed in the September 18, 2001 edition of the document titled "HEALTH Laboratory Safety Committee Organizational and Operational Protocol"

Signature_____ Date_____

Member attestment

Being selected as a □ Member, □ Chairperson, □ Vice-Chairperson, I agree to perform the below duties. Further, I have read the *Laboratory Safety committee Organizational and Operational Protocol* and agree to its provisions. Lastly, I pledge a sincere and committed effort to strive toward creating the safest work environment possible.

Name (print)_____ Signature_____ Date_____

Attachment #3- In-house Incident Report and Incident Follow-up Report

See next page

Rhode Island HEALTH Laboratories

In House Incident Report

Purpose: To document any incident resulting in personal injury or an exposure to a noxious chemical, infectious agent, or radiation and to reduce the potential for repeated incidents of a similar nature.

Guidelines: Complete this form within several days of the incident.
Give completed form to the Safety Officer or other designee responsible for accident investigation. A separate form must be completed for Workman's Compensation.

Incident Description	
Date & Time of Occurrence	
Location	
Describe Incident	Be specific about equipment, instruments and/or substance involved. Include the names of witnesses (if any).

Injuries received (if any):
Name and Signature of Person Completing This Report: **Date:**

Rhode Island HEALTH Laboratories

In House Incident Follow-up Report

Purpose: To investigate incidents and make recommendations to prevent their re-occurrence (if applicable).

Guidelines: **Safety Officer or designee**: Complete this form, along with the help of the Section Chief, Supervisors or other, within several days of receiving the *In House Incident Report*. Forward completed copy to Section Chief and Supervisor for review and signatures. Retain the completed form.
Section Chief, Supervisor: Review results with affected person(s).

Were all safety precautions as outlined in the HEALTH Laboratories Safety Manual being followed at the time of the incident? Be specific.

Other than those already outlined in the Safety Manual, are there any additional precautions that could have prevented this incident?

What steps, if any, will be taken to prevent reoccurrence of a similar incident? Please include persons responsible and time frames.

Additional Comments:

Person Completing This Report: **Date:**

Signature of Section Chief: **Date:**

Signature of Supervisor: **Date:**

Reviewed with affected persons: **Date:**

12/11/02 Version

Attachment #4- HEALTH Laboratories Protocol for the Response to Potential Bloodborne Pathogen Exposure

HEALTH Laboratories Protocol for the Response to Potential Bloodborne Pathogen Exposure

The immediate response to an exposure incident is critical in order to improve success rates for preventing certain bloodborne and other pathogens from establishing infection. **The effectiveness of prophylaxis treatment for certain pathogens diminishes past a time frame of several hours**. If you experience an exposure incident to blood or other potentially infectious body fluid, complete the following:

1) Immediately cleanse the exposed area(s) following standard methods. For skin or wounds care, wash the affected area(s) with soap and water for several minutes. For eyes, use a plumbed or personal eye wash unit (followed by a plumbed unit) for several minutes. For other mucous membrane exposures (i.e. mouth), rinse thoroughly with water for several minutes.

2) For exposures occurring during normal working hours, immediately notify one of; Your Section Chief, Supervisor, Laboratory Director, HEALTH Disease Control nurse or other staff member, so that they may assist you in obtaining proper medical care and arrange follow-up care coordination through the HEALTH Disease Control office. If there are no staff members available to assist, or if the exposure occurs after-hours, make the arrangements for medical care yourself.

   The recommended method is to seek medical care from the Miriam Hospital Immunology Center; a department of the Miriam Hospital with established expertise and experience in responding to bloodborne and other pathogen exposures. The Center is located on the 2nd floor of the Fain Building on Fifth Street (across from the Emergency Room entrance) in Providence.

   To use their services, call the Center at **793-2928**. If you call between 8 AM to 12:30 PM or 1:30 PM to 4:30 PM, Press 2 on the telephone keypad to schedule an appointment or to speak to the Center's secretary. When you reach the secretary, identify yourself as a HEALTH employee then explain the incident and follow their instructions for obtaining medical care. If you call between 12:30 PM and 1:30 PM (lunchtime for the Center), follow the instructions for leaving a message. The staff will respond shortly. Alternately, as described on the message, follow the instructions for calling the Center after 4:30 PM, which include paging the on-call Immunology Physician.

2) After you have received proper medical care, notify the Section Chief or Laboratory Supervisor (if this has not been done already) within 24 hours. They are responsible to transfer the case to a HEALTH Disease Control staff nurse for follow-up and care coordination.

3) Further details of the HEALTH Protocol for the Response to Potential Bloodborne Pathogen Exposure including details of services provided at the Miriam Hospital Immunology Center, source blood testing restrictions, etc. are located in the HEALTH Bloodborne Pathogens Exposure Control Plan document, available from your Laboratory Chief.

Note: It is possible that telephone instructions, options and business hours may change at the Miriam Hospital Immunology Center. Always follow the most recent instructions when calling for medical care.

Attachment #5- Visitor Policy

Visitor Policy

Because of concerns for safety and security associated with activities of the HEALTH Laboratories, it is necessary to administer a visitor policy. The policy will take place immediately and will be strictly enforced. Host employees who violate this policy will be reminded of its provisions and the incident will be reported to the appropriate Section Chief.

General guidelines

The switchboard operator will require all visitors, without exception, to sign the visitor log book located on the front of the reception desk. He/she will issue a visitors identification pass, which must be conspicuously displayed during his/her stay. If the visitor is a HEALTH employee, their employee identification badge may be used in place of the visitors identification pass.

The switchboard operator will contact the host employee (HEALTH Laboratories employee), as identified by the visitor. The host employee will then direct the switchboard operator on how to proceed. In general, if a visitor is frequent, familiar, or otherwise regularly scheduled, then the host employee may authorize the switchboard operator to allow the visitor to proceed to his/her destination(s) without escort. In all other cases, escort must be provided.

During their visit, the host employee must stay with the visitor at all times and always be accountable for their whereabouts. The host employee must also provide appropriate personal protective equipment (PPE), if necessary.

When the visitor has completed his/her business and is preparing to leave the building, the switchboard operator will retrieve the visitor identification pass and ask the visitor to sign out in the log book.

Special Restrictions

Each Laboratory Supervisor is responsible to restrict access to the laboratory when work with infectious agents classified as Biosafety level 2 (or higher) by CDC or hazardous chemicals are in progress. In general, persons who are at increased risk of acquiring infection or for whom infection or exposure to hazardous chemicals may have serious consequences should not be allowed in the laboratory areas. Warning signs and information detailing the agent(s)/chemicals in use, the required immunizations, special precautions etc. must be posted on the entrances to laboratories. When Biosafety level 3 (CDC) work is being conducted or when certain other extremely hazardous work is in progress, the Laboratory supervisor is responsible to restrict access to the areas and to notify approved visitors of the potential hazards.

Visitors under 16 years-of –age, regardless of relationship to staff, are not permitted entries into **laboratories or other potentially hazardous work areas**. Office areas that are an integral part of a laboratory or hazardous work area are considered as laboratory or hazardous work areas. Children must be properly supervised and always accompanied by an adult while on the premises.

References:

Biosafety in Microbiological and Biomedical Laboratories, 4th Edition, May 1999. Pages 1-50. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Institutes of Health.

Safety Notes #6: Children in Laboratories, Shops and Other Hazardous Areas. February 1991. National Institute of Environmental Health Services, U.S. Department of Health and Human Services